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NOTES ON HUSK*

BY

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Before reading these " Notes on Husk " I must explain that Dr. Taylor and I have deviated from the original proposal that I should read a paper and that he should open the discussion. Our work on the subject of husk is complementary and recently some highly interesting facts have been discovered in Dr. Taylor's department. We have thought it better, therefore, that as an introduction to a general discussion on this very important topic, we each present a brief account of what we have been doing.

Probably few will dispute the statement that the most important recent advance in our knowledge of husk is the realisation that this disease can be of great importance in adult cattle.

Twenty-five years ago the classic concept of husk was an acute disease of young animals turned out during their first summer. Sometimes one met the condition in yearlings; but although brought up in a practice where husk, or hoose as it is there known, was encountered on a number of farms in most years, the speaker never saw or heard of it in dairy cows until he returned to England in 1947. During the past three years, in a search for an infectious bronchopneumonia other than husk, 26 outbreaks of coughing in cows and in-calf heifers have been seen. Of these 26, 15 have been diagnosed with certainty as husk and of the remaining 11, non-fatal outbreaks, eight were probably husk. The three which were not considered to be husk were characterised by sudden onset, short duration and in two of the three, by the occurrence, during the course of the outbreak, of diarrhoea of similar type to that seen in winter scours.

The 15 confirmed outbreaks of husk affected dairy herds scattered over the south of England from Cornwall to Kent, in Buckinghamshire, in Essex and in Warwickshire. Four of the herds were Shorthorn in type, four Guernsey, two Jersey, two Ayrshire and one each Friesian, Kerry Dexter and mixed Shorthorn and Friesian. Two of the four Shorthorn outbreaks were accompanied by mortality and in each the deaths were amongst newly calved first-calvers. In two of the four Guernsey outbreaks and in one of the two Jersey, there were deaths among the cows. In the one Ayrshire outbreak with losses, four out of nine of the animals that died, or were killed as unlikely to recover, were cows. The number of herds examined has been small; but the figures do not suggest that, if infection occurs in adults, the Channel Island breeds are necessarily more likely to develop a severe attack than other breeds.

Symptomatically husk in adult cattle may resemble closely the same disease in young stock. Frequently, however, the disease is less acute. Coughing is less severe; but, in spite of the adoption of the usual control measures, such as removal from infested pastures and improved rations, it persists for a much longer period. Outbreaks of this type are very difficult to diagnose with certainty, in fact unless an animal is slaughtered, diagnosis parasitologically may be impossible. Dr. Taylor will have more to say on this aspect of the subject.

Because of the persistent chronic cough and, no doubt also, because of the close association of individuals in the byre at milking time, secondary bacterial infections appear to be more frequent in cows than in younger animals and, whereas deaths in calves are usually attributable to suffocation or to exhaustion following efforts to clear the bronchi of tangled masses of nematodes, in adults one frequently sees cases in which death is related to infection with *Corynebacterium pyogenes* or other bacteria rather than to the worms. The temperature of animals affected with uncomplicated husk fluctuates up and down, rarely passing 105° F. and, although they may lose condition, such animals usually feed well. A fall in appetite and a continuously elevated temperature are probably safe guides to the presence of a bacterial infection and the necessity for the exhibition of sulpha-drugs or antibiotics. As the species of bacteria responsible for secondary infections vary from outbreak to outbreak, frequently from case to case, the best method of treatment can be determined only by trial and error.

Severe uncomplicated husk, similar to the disease in calves, is, of course, seen in cows but perhaps less frequently than the more chronic form. Coughing may be so marked as to cause pregnant cows to expel their calves a week or more before their time. In both types of husk the reduction in milk-yield parallels the severity of the illness and the economic loss to the owner is by no means restricted to the value of the animals that die.

It will be of interest to hear the views of a meeting such as this as to whether husk in adult animals has become more prevalent of recent years or whether, although they have not been brought to the notice of the profession generally, similar outbreaks have always occurred in the past. Possibly mild outbreaks have attacked milk herds from time to time; but, in the absence of milk recording, they have not been considered of much importance. Two factors have arisen of recent years to improve the huskworms' opportunities. Firstly, there is a greater movement of dairy stock. In general, cattle are bought from more distant parts than was common a few years ago. There are changes in the popularity of breeds and some farmers change their breed from time to time to follow the fashion. In this way cattle reared under relatively husk-free conditions may be exposed to heavily infested land. Secondly, the general improvement of grassland necessitates more frequent grazing to make full use of the growth. Put in another way, this means that the cattle must be more concentrated on the land and concentration always encourages helminth diseases. It is surprising how frequently a farmer will

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knowingly take risks with his stock to "get down" the grass in a field.

Before leaving the subject of husk in adult cattle, a few words must be said about diagnosis. When husk takes the acute form that is usual in calves, diagnosis by examination of faeces for larvae should prove sufficient. In older animals, however, there may be coughing with very few mature, adult worms in the lungs or, as Dr. Taylor will be explaining, many immature but no mature worms may be present. In such cases confirmation of diagnosis by faecal examination becomes very difficult or even impossible. Efforts have, therefore, been made to find a more satisfactory, alternative method. Using a partially purified, polysaccharide antigen prepared from defatted, dried worms, two methods have been studied, a skin reaction and fixation of complement.

In some cases of husk a remarkable reaction occurs to the intradermal injection of 0·1 c.c. of a weak solution of the antigen. Within an hour the formation of an oedematous plaque more than doubles the thickness of the skin and in a severe reaction, drops of serum may exude from the surface. Before the third hour the lesion begins to regress, but a little swelling and dried scales of serum may still be visible on the following day. Unfortunately it would appear that the period during which an animal may react is very limited and the chances of obtaining a positive result in one animal or even in a herd are rather small. Animals tested several months after recovery do not react. One false positive has been encountered, but it is just possible that this heifer had recently overcome a mild infestation.

In its present form the complement fixation test also cannot be regarded as very satisfactory. Reference to literature suggests that in using this test for the study of helminth diseases one has to choose between specificity and good titres. With a crude extract of worms, or with an extract of lipoid fractions, reasonable titres can be obtained; but as Stewart (1950) has shown, the sera of sheep infested with wireworm will fix complement in the presence of antigens prepared not only from a variety of nematodes but also from some cestodes. Polysaccharide antigens are very specific, but unfortunately the titres in naturally infested animals are very low indeed. Obviously, when used for diagnostic purposes, specificity is essential. Antigens have been prepared by the author from *Dictyocaulus filaria* of sheep and from *D. viviparus* of cattle. Bovine sera which are positive with *D. viviparus* antigen do not fix complement in the presence of a *D. filaria* antigen which is satisfactory for testing sheep sera. Such an antigen should be sufficiently specific for use in a diagnostic test. It must be mentioned, however, that with these antigens in order to obtain positive reactions, it has been necessary to devise a modified form of test. The usual method of employing 2½ M.H.D. of complement would mean that all sera would prove negative.

D. viviparus antigen has been tested with bovine sera collected from clean cattle and from animals known to be suffering from husk. There have been no false positives. Positive reactions have been obtained with the sera of some affected cattle. Calves and heifers exposed for the first time and older animals passing large numbers of larvae in the faeces usually fail to react. Cows, that have coughed persistently for several weeks without showing larvae or with occasional few larvae, appear, in the few tests that have been made, more likely to react. Nevertheless many of these, too, prove negative.

A study of the reactions of sera collected weekly from lambs infested artificially with *D. filaria*, using *D. filaria* antigen, shows that when lambs born and reared under worm-free conditions die from a heavy infestation the titre of the serum never rises very high. Only one out of three sheep that recovered showed complement fixing antibodies. They were present for about a week, two months after infestation. When the three animals were reinfested with a massive dose of larvae, all three developed relatively high titres one month later. Although these high titres were no doubt in part due to the massive dose, the results in the experimental infestations confirm generally the results of the examination of field samples of bovine sera. As indicated by the development of complement fixing antibodies, there is a better serological response to infection in a resistant animal. If somewhat better titres could be obtained, therefore, the test would be complementary to the examination of faeces for larvae. Possibly an antigen of sufficient specificity, but provoking more reasonable titres, will be developed in the future. At present the value of the test is greatly reduced by the fact that a negative result has no meaning.

Leaving the question of husk in adult animals, there are two other rather unusual aspects of husk which merit brief mention. Firstly, reference may be made to an outbreak of husk which was seen in April, 1949, in Hereford bull calves, most of which had never been out in a field. The calves were being reared, as the custom is, on the dam or on nurse cows and they were living in good, covered yards. The cows were running out and came in, morning and evening, to suckle. In addition the calves were receiving good hay, ensilage, potatoes and turnips. They appeared in excellent condition, but, nevertheless, they coughed and one or two had developed a secondary bacterial pneumonia. Diagnosis was made by *post-mortem* examination. Whether infection was introduced by some of the older calves, that had been out at grass, and had been able to maintain itself in the yards over the winter months or whether the apparently normal cows brought in larvae continuously, it is not possible to say. The owner had experienced similar trouble for a number of years during February to April and considered that the disease was responsible for a serious setback to the growth of his bulls. It is as well to remember, therefore, that husk can occur in animals that have never been out at grass.

Finally, attention may be drawn to a peculiar syndrome that has been observed several times in outbreaks of husk among Guernsey heifers. These cases appear to occur after the animals have been brought into yards from infested pastures and affect subjects which may not be suffering severely from verminous bronchitis. They are characterised by the sudden onset of dyspnoea and death often within 36 hours. *Post-mortem* one finds solidification and oedema of the greater part of the apical and cardiac lobes and the lower portions of the main lobes of the lungs. On opening the trachea and bronchi only a few mature worms are found. Unfortunately since the discovery was made that worms can persist in the lungs without maturing, none of these cases has been seen. It is not possible to state, therefore, whether small immature adults are present. Attempts to incriminate a virus or bacterium as the cause of this condition have not succeeded and histologically the picture is identical with that seen in allergic pneumonitis of man.

It is possible that these cases are the result of the invasion of the lungs of a sensitised animal by the lung worms; but it is equally possible that the worms precipitate a response to some quite unrelated allergen. Similar isolated sporadic deaths where there have been no mature lung worms present have been investigated in cattle both running out and in

yards, but none has come to notice since the necessity for careful examination for immature adults became evident. It is possible, therefore, that these animals also had some worms. Whatever their exact aetiology, these cases are very uncommon and it is a little difficult at the moment to see how they can be investigated further.

In conclusion, the speaker would like to stress that he regards this collection of notes as an introduction to the discussion and that he hopes to learn much from the clinical experience of members present.

Reference.—Stewart, D. F. (1950.) *Austr. J. Agric. Res.* **1.** 285-300.

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FURTHER NOTES ON HUSK*

BY

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The title of Mr. Hudson's paper "Notes on Husk" clearly signifies that he had no intention of dealing comprehensively with the subject. He has also made some reference to new helminthological observations in the department of parasitology at Weybridge and has left it for me to deal with these. Because of this new opening to further investigation the position with regard to the present discussion has changed from what had originally been intended when first the suggestion was made, so that my contribution will no longer be confined to a discussion of Mr. Hudson's paper alone but will deal with additional matter, for which I would suggest the heading "Further Notes on Husk."

In his opening remarks Mr. Hudson reminded us of the classical concept of husk as an acute disease of young animals turned out during their first summer and said that although brought up in a practice where husk occurred he did not remember having seen it in adult cattle until 1947. My own experience is of shorter duration, as, unlike him, I am not descended from a long line of veterinary surgeons, but such experience as I have had has been much of the same kind, and in company with Mr. Hudson I shall be interested to hear of the experiences of the members here present concerning the occurrence of husk among adult cattle, whether it is to be regarded as a recent development or whether the explanation is to be found in our tardy recognition of what has been there all the time.

Following Mr. Hudson's lead I should like to refer to further classical concepts and first to that of the helminthological picture of parasitic bronchitis in bovines, based on a sure knowledge of the outlines of the life history of the causal parasite. This involved the acquisition by the grazing animal of the larvae of the parasitic worm, these larvae reaching the lung via the lymphatics and blood stream, growing to maturity in the smaller air passages in the lung and setting up an irritation in the mucosa lining those passages and leading to a bronchitis and peribronchial pneumonia. These young worms become adult in some four weeks and then begin to lay eggs which hatch on their way to the exterior and appear as larvae in the faeces. It has been apparent for some time that these several important items of information represent only part of the complete story and that there is much more to learn before we understand some of the major points in the epidemiology of this disease.

Still keeping to classical concepts let us consider for a moment the general concept of the epidemiology of helminthic disease among grazing animals, a subject in which we at Weybridge have been particularly interested. According to the modern teachings of parasitology, the nematode worms concerned in these diseases are not to be regarded as essentially pathogenic but as able to live in their hosts without giving rise to any systemic disturbance so long as they are present in reasonable numbers. What these reasonable numbers might be varies considerably with the species of worm concerned, but in several instances it is a matter of thousands, and in some of tens of thousands of worms. This concept certainly applies to parasitic gastro-enteritis and to equine strongylosis or, if one speaks as precisely as one ought to do about such conditions, one might very properly say that the concept of disease caused only by abnormally heavy infestations of these worms applies to *haemonchosis contorta, trichostrongylosis axei, trichostrongylosis vitrina, cooperiosis curticei,* to *strongylosis equina,* to *trichonemiasis,* etc., for all of these are really distinct diseases. There seems to be no essential difference, in point of technical inexactitude, between the terms "helminthiasis" and "bacteriosis," and that we use the one and scorn the other presumably has some reference to the relative states of our knowledge of the two types of organism concerned. We see, therefore, that the rule about disease depending upon extent of infestation applies very widely among the strongyloid worms, and that no reason can be found, in this concept of the pathogenesis of helminthic disease, for the diagnosis of parasitic bronchitis on the finding of only a small number of lung worms at *post-mortem* examination.

The pronouncement of helminthology, therefore, would be against the diagnosis of parasitic bronchitis on the finding only of a few husk worms at *post-mortem* examination, there apparently being ample justification for regarding small numbers as representing a normal infestation. Nor is this view altogether ruled out even now, a point to which further reference will be made. Before doing so, however, I should like to mention the matter of aid to diagnosis through the examination of faeces. According to the helminthology of our college days this procedure would appear to be an excellent way not only of detecting the presence of lung worms but of determining the relative extent of the infection. It has become increasingly clear, however, to those who have employed the procedure that it is of relatively little value in parasitic bronchitis and that no reliance whatever can be placed on it for the establishment of a negative diagnosis—in fact it becomes clear in several directions that the classical helminthological concepts have been wrong.

On account of certain difficulties concerning experimental work on parasitic bronchitis in cattle we had begun to work in the department of parasitology at Weybridge on the disease as it occurs in sheep, these animals being much more easily infected under experimental conditions, and it was during this work that we came across the presence of microscopical worms in the lungs several weeks after the last administration of infective larvae. This observation led us to a renewed search for these immature forms in the lungs of cattle that were showing the coughing symptoms of husk but were not carrying adult worms in the lung and has given some very interesting results that we are following up at the present time, and that we hope may lead us towards a better understanding of the form of husk that is appearing among adult cattle. These results will be reported later.

There are, of course, many other possibilities that await

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further enquiry, and although it may seem irrelevant to do so in a discussion on parasitic bronchitis, a mention ought to be made of the possible occurrence of microscopic or ultramicroscopic infective agents capable of producing bronchitic symptoms that are indistinguishable from those of husk. A severe outbreak of this kind of infection occurred in Jersey at the end of the war, supposedly having been introduced by the Germans along with some French cattle that were brought in during the period of occupation and were maintained on an airfield there. On one or two occasions some of these cattle, which it was their intention to keep in isolation, had broken through their fences and mixed with some of the island cattle, and it was after this occurrence that the coughing disease made its appearance and spread throughout the island.

According to the veterinarians of Jersey, parasitic bronchitis was previously unknown and the husk worm did not exist in the Channel Islands at the time when the Germans entered into occupation. It was difficult to understand, therefore, how a worm infection transmissible only through the acquisition of numerous infective larvae from infected pastures could develop as a rapidly spreading epidemic disease throughout the many groups of animals in the whole of the island.

Investigations which were carried out very soon after the German occupation was brought to an end, and immediately after the termination of the outbreak of disease, failed to reveal the presence of husk worms and as a result of successive enquiries by the parasitological and the bacteriological departments at Weybridge it was thought probable that some infective agent, perhaps an ultravisible virus, had been concerned. Mr. Loosmore, of the department of bacteriology, subsequently succeeded in transmitting some respiratory infection by means of a breathing tube and in producing the characteristic symptoms in previously healthy Channel Island cattle. A number of successive passages was made, 21 animals in all being infected either by means of the breathing tube or by the inoculation of blood from infected animals, before the infective agent ultimately was lost.

A similar kind of infection which, it is understood, differs from calf pneumonia, is common during the spring of the year among housed calves in N. Ireland and has been observed on several occasions in Yorkshire by Mr. Shanks, of the Veterinary Investigation Service, who was familar with the disease in N. Ireland. Some of the epidemics of coughing among cattle in the south of England occur under conditions that are not suggestive of a worm infection and it is obvious that much work still remains to be done on the differentiation of what may prove to be several causes of epidemic coughing among cattle.

Finally, Mr. Hudson has left one other point for me to deal with, namely, that concerning treatment. The efficacy of intratracheal injection is a hardy perennial that still awaits satisfactory experimental proof; it will doubtless come up again in our discussions to-day; the treatment to which I particularly wish to refer, however, concerns the use of antimonial preparations and particularly to the one known as "Anthiomaline."* The preparation has been widely advocated of late and used not a little in veterinary practice. The few practitioners I have met who have run a controlled field trial for their own information, dosing one half of the affected group of animals only and keeping the other half as untreated controls, have concluded it to be of no value. It must be admitted, however, that other practitioners, among whom may be numbered some of outstanding clinical acumen, have concluded that benefit has followed its use. In these instances, however, untreated controls have not been kept for purposes of comparison; furthermore, the additional therapeutic means concurrently employed, such as removal from the infected pasture, good feeding, and proper housing, have added greatly to the difficulty of arriving at a correct conclusion.

The opportunity afforded by a severe outbreak which occurred during the past season in Huntingdonshire was therefore made use of in order to carry out a controlled experiment on a group of some 50 cattle. These animals were divided into four groups which received respectively phenothiazine, "Anthiomaline," phenothiazine plus "Anthiomaline" and no treatment at all. Ordinary clinical observations were made and all of the animals were weighed at regular intervals after treatment had been applied without our being able to detect any significant difference between the four groups. In actual fact the figures concerning the weight gain were against the "Anthiomaline" group although the difference was inadequate to be regarded by the statistician as significant. In our opinion this treatment is of no value.

On general grounds, however, the prospects of finding a suitable anthelmintic would appear to be far from hopeless and we may look towards the future for something good in this direction. The deplorable shortage of research staff for the investigation of the numerous important parasitic conditions that occur in this country has now, in part, been put to rights and although the direct development of new anthelmintic substances is not our particular field of work at Weybridge we hope soon to be able to try out many of the promising new anthelmintic drugs that have recently appeared and that through one means and another this very troublesome disease will be brought under control.

Discussion

Mr. T. A. R. Chipperfield: Intratracheal injection was a hardy perennial, and the fact remained that husk was an acute clinical condition. Scientists said there was no curative treatment apart from feeding the animals well, but the veterinary surgeon must "do something" to justify his existence in the face of the owner. One or two cattle died, so the experts were called in and arrived just as the disease had abated and the cattle were returning to normal. Then the experts got the credit!

He thought the use of an agent, *e.g.*, an intratracheal injection which caused coughing that shook the animal from top to toe, was of some help.

Small and unhealthy animals would have a heavy infestation, but where the farm management was at a high level, and there was good nutrition, less trouble was experienced.

Dr. Taylor: He realised that in practice it was very necessary to do something, even if it shook the animal from top to toe into its grave! If a few of the worst died as a result of the treatment and further deaths ceased, then the treatment was considered successful. The efficacy of intratracheal injections was still awaiting experimental proof. There were no controlled experiments which showed any beneficial action. Better feeding, change of pasture and good housing produced improvement, without any treatment. Nutrition was very important.

Mr. G. H. K. Peace: Had Dr. Taylor ever treated husk by sulphur inhalation, or fumigation—causing a great deal of coughing, and had he thought of a treatment with arsenicals such as "aricyl"? Also, what were Dr. Taylor's views on how long it took a parasitic infection to work out without any treatment at all, *e.g.*, where coughing cattle were taken off pastures at once and prevented from grazing (so that they could not re-infect themselves) by keeping them in concrete yards and giving them a ration equal in value to that at pasture instead of a very good one?

Dr. Taylor: With reference to arsenical treatment, he did not know of any controlled experiments that had shown any benefit. Except in controlled experiments it was difficult to prove whether the improvement in conditions of management, or the drugs, were responsible for successful results.

* "Anthiomaline" is the trade name for antimony-lithium-thiomalate, which is one of the several antimony compounds that has proved effective in certain filarial infestations and in schistosomiasis.

Observing cattle under such conditions that they could not acquire any fresh infection was one of the things they were working on at the present time; also how long the worms remained undeveloped and what brought them to development, whether they might in some instances be inhibited for a matter of weeks or months, and the effect of a change in the food, etc.

They might find that animals could pick up infection, and the larvae remain inhibited in the lungs, for some months before they grew to maturity.

Re sulphur, etc., he could only make the same monotonous reply. There was no proof; it was only his opinion that it was worthless. There was a difficulty in experimental infection of cattle and the only check was to carry out controlled experiments in the field.

Mr. M. Glynn: How did the parasites get from the bowel to the lungs, and how long did they take?

Dr. Taylor: In experimental infections, larvae were often delayed in the lymphatic glands and might remain there from 2 to 12 days after infection; some of the larvae, however, find their way to the lung three or four days after infection.

In the resistant animal many of them would be killed in the lymphatic glands before they got to the lung, but in a susceptible animal most of them would get through there, and if the worm developed unhindered, larvae might appear in the faeces four weeks after infection.

In dry parts of America infection died out very rapidly. Observations from the field in Great Britain suggested that the parasites could easily live through the winter and perhaps for 12 months in the pasture. Observations at Weybridge suggested that they lived for a long time, so long as they were enveloped in mud and allowed to dry out very slowly.

After cattle are taken out of infected pasture, within the first month perhaps 50 per cent. to 60 per cent. of the worms will have died; within the next month another big percentage die, but perhaps 1 per cent. might be in a favourable position and remain alive for 12 months.

Mr. D. N. Willett: Was there any treatment of the pasture which would help to clear it, apart from drainage?

Dr. Taylor: No. The parasite was so resistant to chemical poisons that chemical treatment would kill the pasture before the parasite.

Mr. Chipperfield, in reference to Mr. Hudson's remark on this subject, questioned the picking up of infection from new leys.

Mr. Hudson: He was not satisfied that infection was not picked up on that first ley. In this particular case it was a herd of Ayrshire cows and in-calf heifers which were crowded in from various herds on three different farms, with a view to some of them being sold. They were put in a very small paddock which had been previously cultivated for approximately six years.

When they had been there about three weeks they started to cough and a very severe outbreak developed. They were the only animals on the farm coughing and they were trying to prove that they had picked it up on this paddock.

Some time elapsed and they found there were cases of husk on the farms from which those cattle were drawn. The cattle were concentrated there—other herds which were not so concentrated developed it only mildly. Out of these 33 animals they lost five in the paddock.

Mr. J. K. Fletcher: Had Mr. Hudson any observations on climatic conditions and incidence of husk? In the dry summer of 1949, cropping was close to the ground by the middle of July, and the level of nutrition fell. Last year there was a good growth on most farms up to November, and there was good nutrition. Yet the incidence of husk seemed to be very much higher in 1949 in the dry season. Was that due to the closeness of the ground, or to the fact that nutrition was naturally lower in 1949 than in 1950?

Mr. Hudson: He did not know the answer. Husk was less prevalent in 1950 than in 1949 in this area, yet in some parts of the country it was much worse in 1950 than in 1949.

Mr. Peace remarked that one gained the impression that the source of infection was close to the ground.

Dr. Taylor: That was a very interesting question. In the outbreak in Hunts husk was particularly bad in 1950 but in Cumberland 1949 has been the worst year. The amount of herbage in the autumn appeared to be important.

He had heard that husk was associated with land which was low-lying, and where there was a certain amount of surface water from which the cattle might drink. With 1949, a dry year, the wet weather came along later in the summer and autumn, and he supposed surface water collected on the ground. It was difficult to separate the effects of close grazing from a lower plane of nutrition.

Mr. Chipperfield: Lowland being more wet than upland?

Mr. Hudson: Where grazing was close to the ground there was a lower level of nutrition. Last year husk appeared in a lot of yearling heifers where the grazing was not really close to the ground, but the cattle had been put back on the pasture much more frequently. The crop was very good and the nutrition was good in animals, but the concentration factor was involved as well.

Severe husk was due to either one or the other of these factors.

Mr. W. R. Hill: How was the actual parasite transported from one part of the country to another when not transmitted by cattle?

In a very severe outbreak in Sussex, cattle from Jersey were put on a piece of grazing which was a first ley. Two previous crops had been grown—the crop being pumpkins—and after this crop, these animals came direct from Jersey and had not been running on any other ground, yet still developed this infection. In reply to Mr. Hudson, no manure had been brought on these farms.

Mr. Pasfield well remembered this particular outbreak as infection was particularly violent, and asked, the condition of adult worms in animals being practically unknown in Jersey, could the infection develop at a faster rate than normally?

Mr. Chipperfield: It was quite obvious that the prevalence of husk was grouped separately in adult and young cattle. Would an injection of an extract of worms be of any value in protecting susceptible cattle? He, for one, would be quite happy to inject a protein compound prepared from bodies of worms. Would one worm per c.c. be a good standard?

Mr. P. N. Blair-Fish: What would be the effect of injecting live larvae subcutaneously?

Dr. Taylor: Many experiments of that type had been carried out and immune bodies were known to be present, but nothing of practical value as protection had been shown.

Mr. Peace: Did any virulent toxin emanate from the bodies of these worms, having any effect on the animal, analogous to that in strongylosis in horses—a damaging toxin produced by the bodies of these worms which, under certain conditions, could have a very bad effect?

Dr. Taylor: Toxin production by worms was a very convenient way of explaining injury. In parasitic gastritis in sheep, very often that could not be demonstrated, but it was evident that it was worm infestation that was causing the disease. A nicer way to put it was that the activities of the worms reached the point at which they interfered with the action of the fourth stomach. Many people said they must produce a toxin, but no one had been able to demonstrate that toxin.

He believed it was Smythe who stated that intratracheal injection was bad because it killed the worms, and dead worms produced worse toxins than live ones. He thought it must come from the general idea that surely there could not be anything worse than toxins from the bodies of dead worms!

Mr. Pasfield: Had Mr. Hudson any experience of the use of antihistaminics in emphysema of adult cattle?

Mr. Hudson: He had often talked to people who used them. Some said they worked quite well and others that they were no good, but he had no personal experience.

Mr. Fletcher: What advice could Dr. Taylor give to the general practitioner facing an acute outbreak, where there was considerable coughing with bronchial pneumonia and pleurisy? What steps should be taken to establish or eliminate husk?

As far as he could understand it, the only satisfactory course that could be adopted was to submit a portion of lung for expert examination after a *post-mortem* examination. The examination of faeces for infected larvae seemed to be a very uncertain method, in that a number of cases might be infected with husk or parasitic bronchitis, while passing none, or only negligible quantities of larvae in the faeces. The owner was very alarmed and it became necessary to establish a definite diagnosis.

Dr. Taylor: The true diagnostician would pray for an animal to die! Some of the lung would be required in order that he might try to find these larvae. The finding of larvae in the faeces of adult animals was unlikely. The complement fixation test might be of value, but he would leave that to Mr. Hudson.

Mr. Hudson: His work was not to investigate husk, but to investigate coughing not due to husk. He had difficulty in finding an outbreak which he was sure was not husk. Faeces were submitted, but they could not find anything. They bought the animal and post-mortemed it, and found it had husk. There was no satisfactory diagnostic method, unless the animal died.

Mr. Fletcher: Most of them could recognise outbreaks which did not appear to be husk. They got instances of outbreaks of acute coughing which left dull patches in the lungs for many years afterwards, but the animal made quite satisfactory progress. This seemed to be a different picture from husk, leaving emphysema and pleural adhesions; the noises were so great one could hear the pleural noise at a distance, even when the animal appeared in good health.

Mr. D. N. Balls instanced an outbreak in a small herd of Jerseys—about eight cows and eight heifers, running separately from another herd in the same ownership. The other herd was mostly Friesians and Shorthorns. The animals had not been on the pastures for about 12 months.

The young ones were passing larvae, but not the adult cattle, which were ill for two or three months, and eight cows were very ill indeed, but appeared to benefit from arsenicals, yatren and some sulphonamides. Mr. Balls wondered if convalescent serum had ever been used in prolonged cases of this kind.

Dr. Taylor: Michel had tried sulphonamides and concluded that there was a result in sheep suffering from parasitic bronchitis. On the other hand, many practitioners were definitely of the opinion that sulphonamides were of no value. Vaccines might have some action in counteracting the complications, as in the later stages of the disease they were dealing not with the husk but with the pneumonia.

Mr. Balls: Twelve yearlings which had husk rather badly were given M. & B. 693 for three days and the response in those cows was remarkable.

Mr. Chipperfield: M. & B. 693 was good for active pneumonia.

Mr. Pasfield wondered if it was Mr. Hudson's experience in mixed herds that Channel Island cows were the first to be affected, or were more severely affected.

Mr. Hudson: No breed seemed to be more susceptible than another.

Mr. Michel: If worms were present, they were a predisposing cause to secondary invasion and it was necessary to continue to dose the animals with sulphonamides until the worms were eliminated. The practical usefulness might be rather limited for that reason.

Mr. Blair-Fish: Were there records of cattle having husk twice as yearlings and when adult, or did an acute attack really confer a solid immunity for life? What was the clinical picture of the early stages in resistant animals?

Dr. Taylor: He had not come across cattle that had suffered twice, but undoubtedly that must occur. Resistance which developed due to previous infection and age was very useful but not a solid immunity. It was a useful immunity in sheep, but easily broken down if animals were put on a poor diet, and the same would happen in cattle. It was also a very useful immunity in cattle and enabled them to graze on infected pastures.

Mr. Hudson: They had, of course, had no cattle deaths in cases of oedema. Further, they had only seen the lungs of animals which they had killed. There had only been about three altogether. Two coughed rather badly, and the other one not so badly. Macroscopically there was nothing to see in the lungs—they might be regarded as normal, healthy lungs: never any blocks of mucus as in acute cases in a calf with adult worms.

Mr. Michel: There were outstanding differences between the effect of the larvae in the intestines and lymph glands, in so far as original re-infection was concerned. Very few worms ever seemed to reach the lungs, and those that did would develop at varying rates, which seemed to fit in very well with the emission of antibody and the complement fixation test. He might add that this retardation of development of the worms in the lung did not seem to have any relation to the state of nutrition of the animal.

Miss Phillips: Were deer infected by the same worm?

Dr. Taylor: Deer were probably better hosts than most cattle.

CANADIAN ANIMAL HEALTH EMERGENCY ORGANISATION

A contributor to the *Family Herald and Weekly Star*, of Canada, reports the setting up of an Animal Health Emergency Organisation by the federal department of agriculture, with Dr. T. Childs, the department's veterinary director-general, at its head and a central office in Ottawa. Also working with this central committee will be "the best animal pathologist who can be obtained," a civil defence official and a representative of the Royal Canadian Mounted Police. Working committees will be established in all 10 provinces, their members to include the head of the district veterinary office, the provincial veterinarian and pathologist, the head of the agricultural extension service and the provincial civil defence co-ordinator. Sub-district committees will include the Mayors, local authority and civil defence officers and personnel, among whom veterinary surgeons are essential units.

At the moment, this organisation is regarded as a means of both extending and tightening up federal machinery for the detection and control of disease amongst livestock, but this expansion of the control programme is also there "to meet the possible threat of biological effect on our stock."

* * * * *

Weekly Wisdom

There is a good deal to be said for the theory that it really takes two to talk shop. It is when two members of the same profession get going that the rest of the company begin to suffer.—Times (fourth leader).

LIVESTOCK IMPROVEMENT IN THE TROPICS

(Contributed)

From reports which have appeared from time to time it is evident that the existing arrangements for carrying out livestock improvement work in the tropical parts of the Commonwealth are not uniform, and in some cases are not working satisfactorily. It is proposed, therefore, briefly to review the position and if possible to point to the root cause of the trouble where this exists.

In fairness to past workers in the tropics the way in which this work was undertaken in years gone by should be emphasised. Those with long memories will not need to be reminded that much of the progress made was the result of the endeavours of enthusiastic veterinary officers who were wise enough, even in their generation, to see that their main concern must be, not the cure of the individual, but the general improvement of stock, with a view to making them more productive. That they were correct in their approach to the problem was confirmed by the Lovat Committee, who examined the work of the Colonial Veterinary Services in 1929 and in the course of their report state that these (veterinary) officers are called upon to treat animals in the mass, and to deal not only with a greater variety of diseases than are prevalent at home, but also with questions concerning the improvement of breeds and nutrition.

The number of veterinary officers who have devoted their lives to this work in the tropics is legion, but one might mention the names of Theiler in South Africa and Olver in India as just two of the most successful, largely because they were able to persuade the authorities of their respective countries to develop an organisation so staffed and equipped that it was capable of dealing with the subject of livestock improvement as a whole and not as a series of disjointed efforts. The institutes at Onderstepoort and Muktesar respectively, with their sections for Animal Nutrition and Animal Breeding, in addition to the numerous sections devoted to the study of disease conditions in all classes of stock, are lasting monuments to the breadth of vision of these two members of the profession.

Unfortunately, the good example set in these two countries has not, generally speaking, been followed elsewhere. Instead, livestock improvement work has been allowed to develop in haphazard fashion. Some species of stock have been placed in the care of one department, some in another, and some even divided between two departments, with the result that the key position which the veterinary officer must hold in any organisation for livestock improvement in the tropics is apt to be overlooked, and those requiring advice on this subject either go to the wrong person for it or to no one at all.

In fact, matters have now reached such a state of confusion that we have the spectacle of the Colonial Office, which maintains a large and experienced veterinary staff, issuing a report on livestock improvement in Nigeria, which makes the fantastic recommendation that the livestock policy of that territory should be placed in the hands of a series of boards, on which there is to be no veterinary representation.

And, as if to add weight to the absurdity of such a suggestion, almost at the same time as this report is published, we are told that the Gambia Poultry Scheme has failed. From the evidence so far available it is quite clear that if there had been a department organised on the lines of those functioning in South Africa and India to which

the Colonial Development Corporation could have gone for advice concerning the Gambia Scheme, this fiasco, which involved the loss of nearly £1,000,000 to Great Britain, might have been avoided.

The production of more food still remains a most desperate need in the world to-day, particularly food of animal origin for human populations in the tropics, and it is, therefore, of great interest to learn how an important body like the Inter-African Conference on Food and Nutrition, which met in the French Cameroons in 1949, proposes to tackle this subject. Confirming what has been said before in these pages, this Conference recognises the indivisibility of the subject of livestock improvement and observes that for the increased production of animal foods, the closest co-ordination is necessary between all workers in those items which together make up the major subject of animal husbandry, including measures for disease control, and further urges the closest collaboration between those services concerned with animal husbandry, agriculture and forestry.

The inclusion of veterinary personnel in this large team is evidently intended, so that the writing is now on the wall, and every opportunity should be taken to point out that the veterinary profession, by reason of the basic training which its members receive in all animal husbandry subjects, apart from the essential nature of their services in matters of disease control, is able and anxious to take a leading part in this vital campaign.

It should hardly be necessary to mention that in those territories where a veterinary *cum* animal husbandry service already exists, a ready-made organisation is available to carry out the recommendations of that Conference, if required, and veterinarians in those territories will be in a position to take their proper place at the head of the team. Where it does not, there is no certainty as to how the requisite organisation may be developed, and there is the danger that veterinarians may be relegated to a comparatively minor position in it, with results damaging to the development of food production in the territories concerned.

We have already seen one egregious example of what happens when an attempt is made to run a livestock scheme in the tropics without adequate veterinary advice. For the sake of all concerned, it is to be hoped that this folly will not be repeated.

FOWL PEST

Imports of Poultry from Canada, Holland and Jersey

The Minister of Agriculture and Fisheries announced on April 5th that the Government had decided that, in view of the serious risks involved for our own poultry industry, imports of poultry carcases from countries where fowl pest is endemic must be prohibited for the time being. An order was subsequently made prohibiting the importation of dead poultry from the countries concerned.

Since that time fowl pest has spread in certain countries where it was formerly not regarded as endemic, and in pursuance of the Government's earlier decision it is now necessary to prohibit the importation of poultry from Canada and Holland. An order has accordingly been made under the Diseases of Animals Act whereby the importation of poultry carcases from these countries is prohibited as from November 12th, 1951. The order also permits the importation of poultry from Jersey, where fowl pest does not exist.

It had been decided to review the question of the importation of dead poultry in the autumn in the light of supply and disease considerations, but it has not yet been possible for this review to take place. The matter will no doubt be considered by Ministers very shortly.

CLINICAL COMMUNICATION

A CONTROLLED OBSERVATION ON THE VALUE OF ANTIMONY LITHIUM THIOMALATE ("ANTHIOMALINE") IN THE TREATMENT OF HUSK IN CATTLE

K. C. SELLERS and E. L. TAYLOR*

Some of the leading pharmaceutical houses have made a practice of including in their handbooks a mention of lungworm disease among the several indications for the use of their anthelmintic antimony compounds. This recommendation would appear to be based on inadequate evidence as, so far as we are able to ascertain, there are no records in the scientific literature of appropriate experimental trials and it is unsound to argue by analogy where anthelmintic action is concerned. Suitable opportunities have, therefore, been sought for the arrangement of controlled observations in the field, the outcome of one such trial being recorded in the following note.

The opportunity was provided by a very acute outbreak of husk among some 120 store cattle on a farm that was being managed by the Huntingdonshire Agricultural Executive Committee. The particular group of cattle concerned in the trial numbered 49, of mixed breeds and sex and varying in age from 18 to 31 months. They had been purchased as four- to five-day-old calves for rearing on nurse cows and had been kept in a yard during their first winter, followed by a summer at grass. The movement to the farm where the trial was conducted took place in October, 1949. They were kept in yards during the winter and in May, 1950, were moved to two fields, one of 36 acres and one of 31, their grazing alternating between the one and the other throughout the spring and summer. Both of these fields had been seeded down in 1945 with a mixture of rye-grass and clover. They had been grazed and used for hay during the succeeding years and in 1950 were still in excellent condition.

Although husk did not appear in 1949, it was of common occurrence on that ground and made one of its frequent reappearances during the second week of August, 1950, when all of the animals quickly became infected. The symptoms were those of severe, constant and painful coughing, profuse lachrymation with conjunctival congestion, and rapid respiration accompanied by a marked loss of condition during the latter part of August. An examination of 20 faecal samples revealed the presence of lung worm larvae in one instance only, the count being 25 per gramme. *Post-mortem* examination of the lungs of three animals which subsequently were slaughtered revealed the presence of microscopical worms in the early fifth stage of development and there can be no doubt that the condition was due to *Dictyocaulus* infestation. Details of the observations of microscopical larvae in the lungs will be dealt with in a subsequent publication.

Through the courtesy of the Huntingdonshire Agricultural Executive Committee facilities were granted for carrying out a controlled experiment on the efficacy of antimonial therapy, for which purpose one of the best-known preparations was chosen, *viz.*, antimony lithium thiomalate, sold under the name of "Anthiomaline" and extensively advocated during the past four or five years for the treatment

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of husk. Eggs of stomach worms had been detected in the faecal examinations previously referred to and it was thought advisable to include phenothiazine in the trial because of the possibility that stomach worms might affect the animals' condition or increase their susceptibility to lung worms. The trial animals were divided into four groups which received the following treatments:—

Group A, "Anthiomaline" and phenothiazine (12 animals). Group B, phenothiazine (14 animals). Group C, "Anthiomaline" (eleven animals) and Group D, no treatment (12 animals). Treatment was applied when the animals were weighed on September 8th, 1950, and they were allotted to the groups in rotation as they came from the collecting pens. Due to factors beyond our control it was not possible to have equal numbers of animals in each group. The animals were weighed again on October 24th, 1950, 46 days after treatment, and it is the weight gains over the period September 8th to October 24th that constitute the principal data on which our conclusions have been based.

Results

Clinical Symptoms.—As a result of the various treatments, no noticeable difference was detected in the symptoms shown in the four groups. The acute coughing phase had ceased by mid-September and although the animals remained at pasture until October 24th, 1950, they all showed a gradual improvement which continued after the animals were yarded. Coughing had ceased by the second week in December.

Weight Gains.—It was decided that the most reliable assessment of this trial would be obtained by a comparison of the weight gains of the four groups. These are shown in Table I, together with live weights at the commencement of the trial on September 8th, 1950. The age and sex of the animals have also been recorded. Although the randomisation of the animals for the four groups was not carried out according to the best procedure which the statisticians recommend, the examination of the proportion of males and females in each of the four groups and an analysis of the variance of the initial weights showed no significant bias with regard to these factors.

A comparison between the average gains in weight of animals in the four groups showed that "Anthiomaline" treatment reduced the increase in weight by about 5 lb., whereas phenothiazine treatment gave an advantage of 3 lb. (Table II). In order to determine whether these effects were significant, the increases in weight over the test period were subjected to an analysis of co-variance taking into account variations in initial weight; it was found that neither "Anthiomaline" nor phenothiazine had produced a significant effect. It could, therefore, be concluded that the trial failed to show any beneficial action from the treatments by "Anthiomaline," phenothiazine or by a combination of the two.

Table II

Comparison of the Mean Increase in Weight of the Four Groups

Treatment	Anthiomaline	No Anthiomaline
Phenothiazine ...	Group A 56·0 lb. 12 animals	Group B 61·0 lb. 14 animals
No phenothiazine ...	Group C 52·8 lb. 11 animals	Group D 58·3 lb. 12 animals

Discussion

As far as we have been able to ascertain, the foregoing account is the only published record of a controlled experiment on the efficacy of antimonial preparations in the treatment of parasitic bronchitis. Although it is not impossible that if given in larger doses, or at a different stage in the course

Table I

Age and Sex, Initial Weights (September 8th) and Weight Gains of Individuals in the Four Groups from September 8th to October 24th, 1950.

Group A			Group B			Group C			Group D		
Anthiomaline and phenothiazine			Phenothiazine			Anthiomaline			Controls		
Age in months and sex	Live weight	Weight gain	Age in months and sex	Live weight	Weight gain	Age in months and sex	Live weight	Weight gain	Age in months and sex	Live weight	Weight gain
20 M.	957	70	29 F.	833	56	22 M.	875	70	20 M.	805	28
20 F.	672	77	20 F.	833	112	20 M.	826	63	20 F.	665	-14
25 M.	973	70	31 M.	882	-7	19 F.	693	49	19 M.	777	91
20 F.	770	0	25 F.	805	77	25 M.	875	42	20 M.	875	63
25 F.	707	49	24 M.	749	28	20 F.	707	70	20 F.	753	70
20 M.	714	14	20 M.	805	66	20 M.	770	63	25 M.	805	34
25 M.	875	84	20 M.	1,001	28	20 F.	812	63	26 M.	791	91
25 F.	735	42	20 M.	861	140	18 M.	707	42	19 F.	791	84
25 M.	861	0	18 F.	693	84	18 M.	952	35	20 M.	833	28
20 M.	728	98	18 M.	791	63	20 M.	700	28	20 F.	833	56
25 M.	749	63	19 M.	847	70	25 M.	875	56	25 F.	728	126
20 F.	742	105	20 M.	896	56				20 M.	845	42
			25 M.	952	35						
			20 F.	931	56						

of the infection, the preparation used (Anthiomaline) might have produced some observable effect, the dose employed was that which is known to be effective in certain other helminthic diseases and the outcome of the trial provides strong presumptive evidence against its activity in this disease.

Two private communications of controlled clinical observations carried out by practising veterinary surgeons during the course of their daily work show that similarly negative results were obtained and we think it probable that the favourable impressions of which we have heard from other quarters are not well founded. Although acute clinical discernment frequently may succeed in leading to a correct conclusion this would appear to be an example in which it has failed to do so. No matter how able the observational powers of the clinician may be, it is asking too much of mental analysis that it should provide a correct answer on the efficacy of a drug when three other treatments known to be effective in many instances are employed at the same time, namely, to remove the animals from the infected pasture, to improve their diet and to house them comfortably. If a markedly active drug were to be used under such test conditions it would doubtless be possible to observe an effect by comparison with other outbreaks of the disease in which the hypothetical drug had not been employed, but where the expected benefit is only a slight one, as in the present instance, it is not possible to arrive at reliable conclusions, and we regard the negative results of the small controlled experiment recorded here as of greater value than conclusions based on clinical observation.

SUMMARY

A controlled observation on the efficacy of "Anthiomaline" in the treatment of an acute outbreak of husk in a group of 49 cattle failed to show any beneficial effect and it is concluded that the favourable opinions formed as a result of clinical observation alone are to be explained by the simultaneous introduction of other factors including removal from infected pastures and improved diet.

Acknowledgments.—We are greatly indebted to the members and staff of the Huntingdonshire Agricultural Executive Committee for the facilities provided to carry out the trial. Also to Mr. Basil Jenkins, Livestock Officer, for the valuable help which he so readily gave.

tions of total volatile acid in thoracic lymph were small and when the rate of lymph flow in comparison to blood flow is considered there is no reason to suppose that the channel forms a significant route followed by these acids. On account of this it is suggested that butyrate is metabolised somewhere in the wall of the rumen and the possibility of metabolism of the other acids is also present, although if this occurs it must be less rapid than that of butyrate for, with the exception of butyrate, rumen blood volatile acids reflect the rumen volatile acids closely and acetate represents the greatest individual fraction. When the calorific value of these acids was calculated, acetate still represented the greatest single source of calories in the form of short chain fatty acid passing to the liver.

A. T. P.

* **A Comparison of the Mixtures of Acetic, Propionic and Butyric Acids in the Rumen and in the Blood leaving the Rumen.** KIDDLE, P., MARSHALL, R. A., & PHILLIPSON, A. T. (1951). *J. Physiol.*, **113.** 207.

ABSTRACTS

Estimation of Genetic Gain in Milk Yield*

Among several factors likely to increase milk yield in a dairy herd, the genetic factor has received most practical consideration in recent times. The authors examine the previous estimates of genetic gain in dairy herds and maintain that such indirect estimates under selection are useless. An alternative they suggest is to estimate the genetic gains directly from the selection applied and they give the results of the application of this method in a closed herd. They present a theoretical method of estimation of the maximum possible genetic gain in milk yield under direct selection and under optimum conditions, quoting a figure of 1 per cent. of the average yield as the maximum possible gain. Applying the same method of estimation of genetic gain from the selection practised in an actual herd, they report an estimated gain of milk yield of 0·7 per cent. per annum for the one herd. They conclude that in normal pedigree herds a figure even less than this can be expected for reasons such as the mean generation length, the introduction of bulls with less accurate knowledge of their breeding values and the selection practises for factors other than yield, *e.g.*, type and butter fat percentage. They suggest that 75 per cent. of expected improvement is derived from the dams of bulls whilst only 25 per cent. follows the selection of dams of cows. Improvement due to this latter factor could be enhanced further by an increase in the number of female calves born in the lifetime of each cow, *e.g.*, by increased longevity of the cow herself, the possibility of sex determination or super-ovulation and transplantation of ova into host cows. Contrary to expressed opinion, the authors do not regard selection for productivity alone as detrimental to the vigour and longevity of the offspring.

W. T. R.

* **Estimation of Genetic Gain in Milk Yield by Selection in a Closed Herd of Dairy Cattle.** RENDEL, J. M., & ROBERTSON, A. (1950.) *J. Genet* **5.** 1.

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Short Chain Fatty Acids in the Rumen and Blood (Sheep)*

Chromatographic analyses of the short chain fatty acids in the rumen of grass-fed sheep under nembutal anaesthesia, and in the blood leaving the rumen show that proportionally more acetate and less butyrate was present in the blood than in the contents. Carotid blood, however, contains appreciable concentrations of acetate and corrections made for the concentrations actually present allow a comparison to be made of the fatty acid radicles absorbed and those present in the contents, This adjustment showed that the mixture of acids absorbed was similar to the mixture present in the rumen except that the relative proportion of butyrate in the blood was still less than half that of the contents. The use of buffered columns allowed acids higher than butyric to be separated in one fraction and it is clear that these acids, although only forming 4 per cent. to 7 per cent. of the total in the rumen contents, were absorbed and appeared in the blood leaving the rumen. The concentra-

(*Concluded on preceding column.*)

VICTORIA VETERINARY BENEVOLENT FUND

Meeting of Council

A meeting of the Council of the Victoria Veterinary Benevolent Fund was held at the Grand Hotel, Eastbourne, on Thursday, September 27th, 1951, with Lieut.-Colonel P. J. Simpson (President) in the chair. The following members also were present: Professor T. G. Browne, Major J. J. Dunlop, Professor R. E. Glover, Mrs. D. I. Glover, Captain W. R. McKinna, Mr. Arnold Spicer, Professor G. H. Wooldridge, Mrs. M. E. Wright (President, Ladies' Guild). Mr. C. W. Francis, Secretary, was in attendance.

Minutes.—The minutes of the previous meeting held on July 2nd, 1951, having been published, were taken as read and signed as correct.

Apologies for Absence.—The Secretary announced apologies for absence from Mr. E. P. Barrett, Professor J. B. Buxton, Messrs. H. W. Dawes, G. P. Male, Professor W. M. Mitchell, Mr. P. E. Mullaney, Captain J. W. Procter, Captain A. Whicher, Major W. H. Wortley.

Correspondence.—A letter was read from the Hon. Secretary of the Veterinary Medical Association of Ireland announcing that Mr. P. E. Mullaney had been appointed to represent that Association on the Council of the Fund, in the place of Mr. P. F. Dolan.

It was resolved—" That a letter be sent to Mr. P. F. Dolan thanking him for his past services on the Council."

Investments.—In the absence of the Treasurer, the Secretary reported that the following investments had been made since the previous meeting, *viz.*:—

Hunting Fund.—Balance transferred to the General Fund amounting to £382 4s. 8d. invested in the purchase of £451 11s. 3d. British Transport Guaranteed Stock, 1978/88, 3 per cent. at 84⅜.

Donations Account.—Balance in hand, amounting to £410 invested in the purchase of £425 17s. 4d. 3½ per cent. Treasury Stock, 1977/80 at 96.

The action of the Treasurer was approved.

Accountant's Report

The following report of the Accountant was read and approved, a vote of thanks being accorded to the respective donors.

Since the previous meeting the following donations have been received:—

	£	s.	d.
Major Brennan DeVine (Life Membership) ...	10	10	0
" A. W." (In Memory of my Sister)	10	10	0
Richmond Dog Show Society (In recognition of services of veterinary surgeons at the Championship Show)	10	10	0
Shipley Cup Bowls Tournament (Eastern Counties Divn., N.V.M.A.)	7	17	6
C. P. Peatt		10	2
C. C. Harris (S.V.R.)		7	6
Collecting Boxes:—			
East Midland Divn., N.V.M.A. ... 5 17 0			
Scottish Branch, N.V.M.A. ... 3 5 6	9	2	6
	£49	7	8

Life Member.—On the proposition of Professor R. E. Glover, seconded by Major J. J. Dunlop, it was unanimously resolved—" That Major Brennan DeVine be elected a Life Member of the Fund."

Cases

No. 132. The Secretary submitted a letter from her husband conveying the grateful thanks of his wife and himself for the financial assistance received from the Fund which has enabled them greatly to improve in health.

No. 237. Widow, aged 65. Two sons, 36 and 35. The Executive Committee reported that as this recipient was now resident in Canada, housekeeping for her elder son, the grant of £1 per week had been discontinued as from the end of August.

A letter from this recipient dated September 1st in reply to one received from the Fund communicating the Executive Committee's decision, was submitted and the Secretary was instructed as to the reply to be sent.

It was resolved—" That the action of the Executive Committee be approved and that the Committee be empowered to take any further steps in this case as it may deem expedient."

No. 278, M.R.C.V.S., aged 38, married, one child, aged four. Qualified Glasgow College, July, 1951. Only income, sickness benefit and assistance under National Health Act. Temporarily incapacitated through accident.

The Executive Committee reported that they had made a grant in this case of £3 per week for three months which terminated at the end of September.

It was resolved—" That the action of the Executive Committee be confirmed."

No. 279. Widow, aged 39; four children, girls 18 and 16, boys 13 and 4½. Eldest daughter a student nurse, other children at school. Only permanent income £13 per annum in respect of one child.

An application dated September 11th was submitted together with a letter from a member in support of this case.

After careful consideration of the applicant's financial commitments in the near future and of the help already given to her by other bodies, it was resolved—" That a grant of £3 per week to commence as from September 1st be made in this case pending the result of her application to the War Office for a compassionate pension, and that the Executive Committee be authorised to take any further action which it may consider desirable following the receipt of the War Office decision.

Date of Next Meeting.—It was agreed to leave in the hands of the Executive Committee arrangements for the next meeting, which, if possible, should be fixed during the week of the R.C.V.S. Quarterly Meetings in January, 1952.

Any Other Matters

Vote of Thanks.—The President referred to the very pleasant environment in which the meeting had been held that day and proposed from the chair the following resolution which was carried with acclamation:—

" That the cordial thanks of the Council be conveyed to the Manager of the Grand Hotel, Eastbourne, for his great kindness in placing the Library of the Hotel at our disposal for to-day's meeting, and that we further record our sincere appreciation for the excellent and gratuitous facilities provided."

The meeting then terminated with a warm vote of thanks to the President for his work in the chair.

SUPPLEMENTARY VETERINARY REGISTER

Royal College of Veterinary Surgeons Successfully Resist Another Appeal

A Divisional Court of the King's Bench Division sitting on Tuesday, October 16th, 1951, gave an important judgment in refusing an appeal entered by Mr. Norman Allender, of Farnworth, Lancashire, against the refusal of the Royal College to register him in the Supplementary Veterinary Register on the grounds that his principal means of livelihood for seven out of the 10 years immediately preceding the date of application had not been the diagnosis of diseases of animals and giving medical or surgical treatment to animals.

The Appellant, in completing the form of application for registration, had made a declaration that he had carried on practice in the same manner as a veterinary surgeon for the appropriate period under the Act at certain premises which he claimed were conducted by his wife as a corn chandler's shop, his professional premises consisting of rooms reached through the said shop. He had entered under "Other means of livelihood," as he was required to do by the form, that he had assisted his wife in buying for the shop and in the conduct of certain boarding kennels. The Appellant had been personally interviewed by the Council. Amongst the material facts which emerged and which were mentioned in the course of the appeal, were the fact that notepaper used by him in writing to the Royal College contained his name as the proprietor of the boarding kennels which he alleged to be conducted by his wife. Further, that there was no separate banking account for his alleged professional practice as a veterinary surgeon other than the joint account relating to the corn chandler's shop and the kennels, the said account being the only one and being in his and his wife's joint names. Further, that during the majority of the period in which he claimed to have been in practice in the same manner as a veterinary surgeon, he had made no returns for income tax purposes in such a professional capacity. Another matter mentioned was the fact that he had described himself when giving evidence in a police court case as a corn chandler.

The importance of the Lord Chief Justice's judgment is in the latter part of the first paragraph of his judgment, where he points out that the Act in establishing the Supplementary Veterinary Register did not intend to benefit persons who did some animal treatment which might be ancillary to that of a veterinary surgeon.

Judgment

The Lord Chief Justice: This is an appeal brought pursuant to section 6, sub-section 5, of the Veterinary Surgeons Act, 1948, the Appellant having applied to the Royal College of Veterinary Surgeons to have his name entered upon the supplemental list. The supplemental list is a list that is kept now that veterinary surgeons have to have professional qualifications, and the object of it was to enable the College of Veterinary Surgeons to put on it people they were satisfied had been, if I may put it so, genuinely carrying on a business as veterinary surgeons although they were not qualified by any examination. The way it is done is that it gives power to the College to enter on the Supplementary Register a person "of good personal character and that during the 10 years immediately preceding the application he has for a period of not less than seven years in the aggregate been engaged in the United Kingdom as his principal means of livelihood in diagnosing diseases of animals and giving medical or surgical treatment to animals": in other words, that he has been genuinely practising, if I may use the colloquialism, as an unqualified vet. It is not meant to allow anybody who has from time to time advised people with regard to or treated a sick dog or a sick cat, or advised that some particular food should be given to them, but that he has been a veterinary surgeon, that is to say, if he has been carrying on that business. Of course, many people who keep what are often called pet shops or animal food shops do from time to time give advice. Other people take in dogs and board them, as I dare say is done in Lancashire largely during Wakes Week. The test for entering on the Supplementary Register is the principal means of livelihood.

The College of Veterinary Surgeons in this case, having considered the man's application, refused it, but they gave him an opportunity of going before them, if he chose, so that they could ask him questions and see if he could satisfy them that it was his principal means of livelihood, and he did not do it.

The appeal that is given in this case is: "Where the Council refuse an application for registration under this section made within the time limited by or under the last foregoing sub-section, they shall state the reason for the refusal and the applicant may in accordance with rules of court appeal to the High Court, and the High Court may confirm or reverse the decision of the Council." The reasons for the refusal have been given in this case; the Council said they were "not satisfied that the applicant during the 10 years immediately preceding the application has for a period of not less than seven years in the aggregate been engaged in the United Kingdom as his principal means of livelihood in diagnosing diseases of animals and giving medical or surgical treatment to animals." In other words, they were not satisfied he had been mainly engaged as an unregistered veterinary surgeon.

I think I have said on a previous occasion, but if I have not I will say it now, that I think the words of the appeal sub-section do require this Court to hear the case and treat it as a rehearing, just in the same way as an appeal from a judge of first instance going to the Court of Appeal, which by statute is treated as a rehearing. We should naturally pay the greatest attention to the decision which has been given below, but it would not prevent us, and has not prevented us in a case where we thought the decision below was not justified on the facts, from reversing the decision of the Council. There is at least one case—I am not sure there were not two—where this Court, having heard the evidence submitted to them, came to the conclusion that the Council had, if I may put it without offence to the Council in any way, taken too narrow a view and we accordingly reversed the decision and ordered the applicant's name to be placed on the Supplementary Register. But it is not a thing we should lightly do, because I think we must pay the same attention to the findings of the Council as the Court of Appeal would always pay to the findings of the judge from whom they are differing. You sometimes find that the facts are not in dispute and nothing turns on the demeanour of a witness, and then the Court of Appeal always finds it much easier—when I say "finds it much easier" I mean they have not the same difficulty if they come to the conclusion that the facts justify a different decision—in reversing the Court below, because nothing they say depends on the demeanour of the witnesses and so forth. They therefore have the same opportunity of forming an opinion as the Court below; but where something turns on the demeanour of the witnesses and so forth the Court of Appeal is much less prone to take a different view.

In this particular case I can only say that if the matter stood solely on the affidavits and without anything to do with oral hearing before the Tribunal, I do not think I should have come to any different conclusion from that to which the Tribunal came. I should have been far from satisfied on the evidence of the affidavits that this applicant was carrying on as a main part of his business the practice of veterinary surgery, which is a compendious expression to comprise the words of the statute. Having read the proceedings that took place before the Council I can only say that my opinion is strengthened on that. This applicant has made some very curious statements. I am not suggesting for a minute that he wanted to mislead the Council or that he was consciously stating that which was untrue, but it is quite clear that his evidence before the Council in certain respects was one way and, when he put his affidavit before this Court, statements are made which certainly are not to the same effect as the evidence which he gave before the Tribunal. I do not propose to go through those matters in detail because I do not think it is necessary; it is enough for me, speaking for myself—my brethren will express their own opinions, if they wish to, on this matter—to say that I am certainly not satisfied that the Tribunal came to a wrong decision. I see no ground for reversing the decision to which they came, and accordingly this appeal fails.

Mr. Justice Hilbery: I agree for the same reasons, but I would like to make just these observations: in the first place I think it is for the Appellant here to satisfy us that the decision below was wrong. In the second place, I think we must apply our minds to the evidence and, on a rehearing, consider the evidence, always bearing in mind the limitations which the House of Lords has more than once laid down as existing on the power of a court of appeal to interfere where the court below has seen witnesses and has given findings of fact which depend upon their having seen the witnesses and assessed by that means to some extent the reliability of the evidence given. Speaking from memory, I think the two cases to which I am referring are *s.s. Hontestroom (Owners) v. s.s. Sagaporack (Owners)*, reported in 1927 Appeal Cases at page 37, which came

from the Admiralty Division, and the case of *Powell & Anr. v. Streatham Manor Nursing Home*, reported in 1935 Appeal Cases at page 243, which came from the King's Bench Division.

Lastly, I would like to say that I entirely concur in the view of my Lord. Having examined the evidence which was given before the Tribunal of the Royal College of Veterinary Surgeons, and having considered the answers given by this Appellant when he made his statement before that Tribunal and answered the questions which were then put to him, I am not at all surprised that they came to the conclusion at which they did arrive. Speaking for myself, I should have come to the same conclusion, bearing in mind that the Appellant had to satisfy the Tribunal, according to the terms of the section in the Act, that he had been engaged during the 10 years immediately preceding his application for a period of not less than seven years in the aggregate in diagnosing diseases of animals and giving medical or surgical treatment to animals as his principal means of livelihood. There was abundant reason to be found in the Appellant's statements to the Tribunal and the matters that he put before them for their failing to be satisfied by him that his principal means of livelihood had been in his treatment of the diseases of animals or diagnosing their ailments.

I agree that the appeal should be dismissed.

Mr. Justice Slade: I agree.

Mr. Ashe Lincoln (for the Respondents): I would in this case ask your Lordships to say that this case should be dismissed with costs.

The Lord Chief Justice: Yes; you are entitled to costs.

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Successful R.C.V.S. Prosecutions

Three summonses under section 5 of the Veterinary Surgeons Act, 1948, were heard at the Leigh County Magistrates Court on October 17th, against Mr. H. G. Hudson, of 181, Elliott Street, Tyldesley. The defendant pleaded guilty and was fined £1 on each summons and ordered to pay an advocate's fee of 2 gns. and 10s. witness fees.

The facts alleged for the prosecution were that a Mr. Jones bought a dog from the defendant, who later visited the dog and gave it an anti-distemper injection for which he charged 12s. 6d. and issued a certificate of vaccination dated April 9th, 1951. It was further alleged that at a later date the defendant treated the dog at his own premises for about three days for what it is alleged he diagnosed as tapeworm infestation.

* * * * *

The Royal College prosecuted successfully in a further case in October, in which the Stratford magistrates imposed fines totalling £25, with 5 gns. costs, upon Mr. E. H. G. Holtham, of Manor Road, Walthamstow, for giving medical treatment to two dogs while not being a registered veterinary surgeon or on the supplementary list. Here again distemper immunisation was involved in the evidence given in support of five summonses, to all of which the defendant pleaded "Not guilty."

LADIES' KENNEL ASSOCIATION SHOW AT OLYMPIA

The 45th Annual Show of the Ladies' Kennel Association was held at Olympia on Friday, November 1st, 1951. This popular annual event, which is run entirely by women, produced a total of 6,295 entries, the actual number of dogs being 3,252.

The award for the best dog in the show went to Mrs. Bryce-Jones for her standard poodle "Champion Frenches Mighty Fine." A Chow puppy bred by Miss J. O. Joshua, F.R.C.V.S., did extremely well at its first showing by carrying off two first prizes and a second.

Several members of the veterinary profession were amongst the exhibitors, some of those noted being Miss B. M. Murray (Borzois), Mr. M. Baird (Deerhounds), Miss H. Neve (Schnautzers) and Mr. R. V. Isherwood (Bedlingtons).

Mr. W. Singleton (father of Mr. W. B. Singleton, M.R.C.V.S.) was judging Scottish Terriers, and Mr. Harold Stainton, F.R.C.V.S., was Hon. Veterinary Surgeon to the Show.

JOCKEY CLUB VETERINARY PANEL

The final report of the veterinary panel which was set up by the Jockey Club in July, 1950, has been made to the stewards of the Jockey Club (says *The Times*). At a recent meeting of the club Lord Sefton, the senior steward, said that the stewards had met the panel for a discussion on the report, which covered a great deal of ground, and were giving the report their fullest consideration. The panel would be retained in existence, and a small sub-committee had been formed for research work. The stewards were most grateful that the panel had agreed to continue to assist them, and had thanked them for all the work that they had done.

NOTES AND NEWS

Diary of Events

Nov. 10th.—Meeting of the Biochemical Society, in the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, 11.15 a.m.

Nov. 14th.—Meeting of the Editorial Executive Sub-committee, N.V.M.A., 2.30 p.m.

Nov. 15th, 22nd and 29th.—Meetings of the South-Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 6.30 p.m. (See Notice.)

Nov. 15th.—Meeting of the Society of Practising Veterinary Surgeons, University of Bristol Veterinary School, Park Row, Bristol, 2.30 p.m.

Nov. 15th.—Meeting of the Herts and Beds Division, N.V.M.A., at Luton (The George Hotel), 2.30 p.m.

Nov. 16th.—Annual General Meeting of the North Wales Division, N.V.M.A., at Ruthin (Council Chambers), 2.30 p.m.

Nov. 16th.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds (Hotel Metropole), 2.30 p.m.

Nov. 16th.—Royal Sanitary Institute Sessional Meeting at Darlington (Council Chamber, Town Hall), 10 a.m. Paper on "Brucellosis: a Disease of Man and Animals," D. J. H. Payne, M.B., B.S., M.R.C.S., L.R.C.P., Director, Northallerton Laboratory, Public Health Service.

Nov. 28th.—Whole-day meeting of the Technical Development Committee, N.V.M.A., 10.30 a.m.

Nov. 30th.—North Wales Division, N.V.M.A., Dinner-Dance at Llandudno (St. George's Hotel), 7.30 p.m.

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R.C.V.S. EXAMINATIONS

Thursday, November 29th.—M.R.C.V.S. Written Examinations.

Friday, November 30th.—Ditto.

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Handbook on the Handling of Animals and First Aid

Copies of the above Handbook are now available, a further printing of this publication having been made in conjunction with Messrs. Baillière, Tindall & Cox. Members of the Association who have not yet received a copy on application may obtain one from the General Secretary, 36, Gordon Square, London, W.C.1. Non-members should send their orders direct to Messrs. Baillière, Tindall & Cox, 7 & 8, Henrietta Street, London, W.C.2, remitting 6s. per copy, plus 6d. postage.

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The New Government and Agriculture

The opinion often is expressed that the country's basic industry, that of agriculture, should be lifted not only above party but out of politics altogether. A change of Government, however, brings us all down to earth and information as to new appointments is received with undiminished interest and often with an enthusiasm quite independent of political leanings.

As we went to press with our last issue it was announced from 10, Downing Street that among the Ministerial appointments approved by the King was that of Major Sir Thomas Lionel Dugdale, Bt., T.D., M.P., who has represented Richmond since 1929, as Minister of Agriculture and Fisheries. Sir Thomas, who is a practical agriculturist—he farms at Crathorne, in the North Riding—was Chairman of the Conservative Parliamentary Agricultural Committee in the last House of Commons, and was the chief spokesman for the party in agricultural debates. In welcoming Sir Thomas to his important and arduous office, it must be said that, irrespective of party, there will be a sense of regret at the departure of Mr. Tom Williams from an office which he has filled for 11 years with distinction and understanding.

The fact that the Minister is no longer in the Cabinet renders of greater interest the specific inclusion amongst the duties of Lord Woolton, the new Lord President of the Council, of responsibility for concerting the policies of the Ministries of Food and Agriculture. This reflects a growing feeling in the country and will enable him to link his experience as Minister of Food during the war with the policy of food production to be pursued by the Ministry of Agriculture.

Finally, we may be allowed a specially welcoming reference to the new Speaker of the House of Commons, for it was Mr. W. S. Morrison who, in 1937, as Minister of Agriculture, at Bournemouth, not only became the first Minister of the Crown to honour the Association with his presence, but took the opportunity (the Agriculture Act having been passed) to stress the importance of the

closest co-operation between the N.V.M.A. and the Ministry during the period of development of the Government's plans for the industry. All who participated in the Bournemouth Annual Banquet will retain a vivid recollection of the new Speaker's fine voice and presence.

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The University of Edinburgh Royal Dick School of Veterinary Studies

The Royal (Dick) Veterinary College, Edinburgh, ceased to be a legal entity on its incorporation in the University of Edinburgh. The question therefore arose of what name the College should have in its new status.

All members of the veterinary profession and, in particular, graduates of the "Royal (Dick)", will be glad to hear that His Majesty has been most graciously pleased to inform the University that the new name for the Royal (Dick) should be "The University of Edinburgh Royal Dick School of Veterinary Studies." So, although somewhat lengthened and a little changed, the essential name by which generations of veterinarians all over the world have known it remains "Royal Dick."

The Court of the University of Edinburgh at its meeting on Monday, October 22nd, 1951, gave formal confirmation to the title which His Majesty has so graciously granted.

In the course of discussion as to what the name should be, the University consulted the Royal College of Veterinary Surgeons which was able to make representations for the continuance of the historic name.

The new title of Professor W. M. Mitchell, who hitherto has been Principal, is now Director of Veterinary Education.

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PERSONAL

Mr. John Francis Appointed to the Chair of Preventive Medicine, Veterinary Faculty, University of Queensland

It is announced that Mr. John Francis, M.SC., M.R.C.V.S., has been appointed to the newly established Chair of Preventive Medicine within the Veterinary Faculty of the University of Queensland. This is the second professorship to be filled since the full five-year veterinary course was re-established in 1950, the earlier one being in Animal Husbandry.

The designation of the two senior research and teaching posts within the young Faculty in this manner serves to emphasise the present trend in veterinary science. The aim of reducing economic loss and animal suffering is being met by an increased application of pathological and bacteriological knowledge to the prevention of disease, while recent advances in animal physiology and genetics are being applied to increase the efficiency of animal production. Queensland, with nearly 8,000,000 cattle, 18,000,000 sheep and more pigs than any other State, and with the majority of its stock within the tropics, possesses many important unsolved epizootiological and ecological problems. The shortage of veterinarians is acute in every Australian State, but it is believed that the development of the Veterinary School of the University of Queensland will in time help greatly to overcome this.

Mr. Francis graduated from the Royal Veterinary College in 1938, having concurrently taken the B.Sc. degree of the University of London. He was for a year Demonstrator in Bacteriology at the Royal Veterinary College before becoming a Research Officer at the Foot-and-Mouth Research Station, Pirbright. In 1943 he joined the Biological Department of I.C.I. and studied the metabolism and antibacterial action of the sulphonamides and sulphones. This work has led to a better understanding of their application in veterinary medicine and to the use of 4:4′-diamino diphenyl sulphone for the treatment of leprosy. This sulphone is the first effective drug cheap enough to be used on a wide scale and may have an important effect on the whole epidemiology of leprosy. The isolation of the growth factor for *Myco. johnei* first demonstrated by Twort & Ingram in 1913 had added to our knowledge of the acid-fast bacteria and may assist in the development of chemotherapeutic substances.

Mr. Francis plans to take up his post in Queensland early in 1952, and in extending to him our best wishes for his happiness and success therein, we would add an expression of indebtedness for the valued assistance he rendered this journal during the several years of his membership of the Editorial Committee. We learn from Mr. Francis that it is hoped to form an adequate veterinary library at Brisbane and that he would be glad to know of any books or journals for disposal, particularly those of historical interest.

Jordan Minister to Great Britain

In the issue of *The Daily Telegraph* of November 1st "Peterborough" informs his readers that "Fawzi Pasha El Mulki," the new Jordan Minister to this country, who arrived from Paris the previous night, has had an eventful career in his 40 years. "He has been Foreign Minister, Defence Minister, Minister in Cairo and more recently in Paris. During this time he has gained considerable prestige in the Arab world as a politician and has proved to be equally successful as a diplomat.

"The start of his public career was sudden and unexpected. The British Council representatives in the Middle East had decided that the most suitable professional career for him was that of a veterinary surgeon. Under their auspices he studied at Edinburgh University. I believe, however, that he never set up in practice.*

"Shortly after his return to Amman he was given a junior post in the Civil Service. Since then his political and diplomatic career has been uninterrupted."

* The Register of Veterinary Surgeons records Fouzi Ead Mulki as a member, also with the academic qualification B.A. (Beirut), who qualified at Edinburgh on July 11th, 1942.

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Old Etonians.—"J. T. E." informs us that his tribute in our last issue to Major C. H. Hylton Jolliffe, F.R.C.V.S., requires correction, inasmuch as he now learns that Hylton Jolliffe was not the only one to enter the veterinary profession who had been educated at Eton: Mr. G. A. Tomlin, M.C., M.R.C.V.S., of New Woodbridge, Suffolk, also is an Old Etonian.

Births.—DINGLE.—On November 1st, 1951, at East Rudham, Norfolk, to Janie Murray (*née* Imrie), wife of P. J. Dingle, M.R.C.V.S., a daughter—sister for Frances.

HOFFE.—On October 26th, 1951, to Ann (*née* Thomas), wife of Ivan A. Hoffe, M.R.C.V.S., a son—Michael, brother for Christopher.

WILSON.—On November 2nd, 1951, at Inverness, to Enid, wife of A. Wilson, M.R.C.V.S., a daughter.

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Deaths.—MACKAY.—On October 15th, 1951, at Kirkgate, Cockermouth, Barbara Russell, younger daughter of John and Nancy Mackay; aged 4 years 8 months.

THOMSON.—On October 24th, 1951, Colin Gordon, aged 7½ years, beloved second son of Mr. and Mrs. Alex. Thomson, of 29, Celtic Avenue, Shortlands, Kent.

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Marriage.—WADLAND—ASH.—On Wednesday, October 10th, 1951, at St. Paul's Church, Wood Green, Wednesbury, by the Reverend Moss, assisted by the Reverend Fox, Harold H. Wadland to Jean Ash, B.V.SC., M.R.C.V.S.

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R.C.V.S. OBITUARY

ALLEN, Dennis Joseph Michael, Parliament Buildings, Stormont, Belfast. Graduated Dublin, December 11th, 1933. Died May 5th, 1951. (Notification just received.)

GORDON, Arthur George, Parliament Buildings, Stormont, Belfast. Graduated Dublin, July 21st, 1922. Died June 30th, 1951. (Notification just received.)

MACEWAN, Neil Alexander MacGilp, Captain late R.A.V.C. (T.F.), Craigard, Wigtown. Graduated Glasgow, December 15th, 1915. Died October 26th, 1951; aged 61 years.

REID, Alfred William, T.D., F.R.C.V.S., Major R.A.V.C. (T.A.) (retd.), Highlands, Ringwould Road, Kingsdown, Deal. Graduated London, December 16th, 1890; Fellowship, December 12th, 1896. Died November 4th, 1951; aged 84 years.

Captain Neil A. MacEwan, M.R.C.V.S.

A TRIBUTE

With the passing of Captain Neil A. MacEwan, the profession has lost a most valued and highly respected member. He graduated at Glasgow Veterinary College in December, 1915, and saw service with the R.A.V.C. in Palestine and Egypt. On return he took over the practice of the late Mr. McConnell in Wigtown in 1919, after a short assistantship in Thornhill. There with his skill and diligence he built up a large general practice. A keen surgeon, his operative manipulation and technique earned him wide fame as a "rig" operator—an operation he undertook with enthusiasm and supreme confidence. Although his practice was largely farm animal, his enthusiasm for small animals never waned—so much so that he became a large breeder and successful exhibitor of West Highland and Border Terriers.

Yet, above all, it is as the man that Mr. MacEwan will be remembered. His striking personality, his right good humour, his integrity and very high principles, his utmost contempt for the conventional, marked him indeed as one of Nature's gentlemen. There never was a student left his door but was more skilled in his professional work and, even more important, was more fitted

to face the ardours and difficulties of a professional life. He had that quiet confidence which goes with knowledge, yet through it all was his extreme modesty. His advice to his students—"Don't do as I do, but do as I tell you"—was indeed typical of him. He gave them of his best, yet he felt they could improve on it and he followed their careers with extreme interest and enthusiasm.

The loss of John, his only son, who was killed in action in January, 1945, dealt him a blow which we, who were with him at that time, alone can appreciate. We know the fight he put up to try to piece together the shattered remnants of his life, and although he may not have entirely succeeded he indeed put up a good fight with the help of a loving and devoted wife.

All who had the privilege of knowing him will be the poorer by his passing. His memory will not fade in their hearts and their sincere sympathy goes out to his widow. J. M., J. E. & J. C.

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ADDRESSES OF DISEASE-INFECTED PREMISES

List Showing the Outbreaks of Notifiable Diseases (Other than Tuberculosis) Confirmed on the Undermentioned Dates Together With

Address of premises on which disease occurred and, in capital letters, the name of the Local Authority concerned.

Anthrax

October 27th, 1951.—Kiln Hall, Farleton, Holme, Carnforth, Lancs (Westmorland); Top Farm, Stretton, Derby (Carcase at: Knacker Yard, Mickley Farm, Mickley, Higham, Derby (Derbyshire).

November 1st, 1951.—Dairy House Farm, Wem, Shrewsbury, Shropshire (Salop).

Fowl Pest

October 26th, 1951.—Ravenscroft, Much Hoole; Wycollar, Chain House Lane, Whitestakes, and The Bungalow, Land Lane, Longton, Preston, Lancs (Lancashire).

October 27th, 1951.—"Marina," Shore Side, Hesketh Bank, and New Moss Hall Farm, Moss Lane, Little Hoole, Preston, Lancs (Lancashire).

October 28th, 1951.—Old School House Farm, Smithy Lane, Much Hoole, and Ashdene, Shore Side, Hesketh Bank, Preston, Lancs (Lancashire).

October 29th, 1951.—Moor House, Land Lane, Longton, and Moorfield Farm, Moss Lane, Little Hoole, Preston, Lancs (Lancashire); 80, Molesey Close, Hersham, Walton-on-Thames, Surrey (Surrey).

October 30th, 1951.—Hillock Farm, Knoll Lane, Little Hoole, and Fir Tree Farm, Cross Moor, Kirkham, Preston, Lancashire (Lancashire).

October 31st, 1951.—Wilbine, Thraupp Lane, Hersham, Walton-on-Thames, Surrey (Surrey); Moorside House, Six Acre Lane, Longton; Hesketh Farm, George Lane, Hutton; The Lions, Knoll Lane, and Glen Dene, Knoll Lane, Little Hoole, and Walton Hall Farm, Walton-le-Dale, Preston, Lancashire (Lancashire).

Swine Fever

October 26th, 1951.—Three Tuns, Staple, Canterbury, Kent (Kent); The Poplars, Holbeach St. John's, Holbeach, Lincs (Lincoln Parts of Holland); Langot Lane, Fair Oak, Eccleshall, Stafford (Staffordshire); Alma Farm, Kirby Misperton, Malton, Yorkshire (Yorkshire, North Riding).

October 27th, 1951.—2, Mill Road, Fen Drayton, Cambridge (Cambridgeshire); 30, High Street, Bolton-on-Dearne, Rotherham, Yorks (Yorkshire, West Riding); 141, High Street, Teversham, Cambridge (Cambridgeshire); Wistow Toll Farm, Warboys, Huntingdon (Huntingdonshire); Park Farm, Little Downham, Ely, Cambs (Isle of Ely); Swan Farm, Rainhill, Liverpool (Lancashire); Beckingthorpe Farm, Bottesford, Nottingham (Leicestershire); St. George's Home, 37, Ryhall Road, Stamford, Lincs (Lincoln Parts of Kesteven); Fox Covert, Grange-De-Lings, Lincoln (Carcase at: Ministry of Food Slaughterhouse, Lincoln) (Lincoln Parts of Lindsey); The Gate Inn, Bratton, Wellington, and The Hollies, Ratlinghope, Shrewsbury, Salop (Salop).

October 30th, 1951.—Bridge Farm, Arrington, Royston, Hertfordshire (Cambridgeshire); Mereside Farm, Marriott's Drove, Mereside, Ramsey, Huntingdon (Huntingdonshire); Oak Tree Poultry Farm, School Lane, Brinscall, Chorley, Lancashire (Lancashire); Moulton Chapel Road, Moulton Chapel, Spalding, Lincolnshire (Lincoln Parts of Holland); Homestead, Drayton Road, Horsford, Norwich, Norfolk (Norfolk); Pig House, Brackenley Lane, Embsay, Skipton, Yorkshire (Yorkshire, West Riding); 58, Middle Deal Road, Deal, Kent (Kent).

October 31st, 1951.—Hilke House, Mere Farm, Fortyfoot Bridge, Ramsey, Huntingdon (Huntingdonshire); Clough House Farm, Holden Road, Leigh, Lancashire (Lancashire); 8, Smallholdings, Shearby Road St. Helens, Lancashire (Carcase at: Abattoir, St. Helens, Lancashire) (Lancashire); Midd'e Street, Metheringham, Lincoln (Carcase at: Abattoir, Lincoln) (Lincoln Parts of Kesteven); Croft Farm, Tivetshall St. Mary, Norwich, Norfolk (Norfolk); Chilbrook Farm, Cobham, Surrey (Surrey); 14, Holding, Letham, Mid-Calder, Midlothian (Midlothian); Brinsworth Street Piggeries, Rotherham, Yorkshire (Rotherham); Brookside House, Haydock Lane, Haydock, St. Helens, Lancashire (Lancashire); Styches Cottage, Burton Constable, Hull (Carcase at: Slaughterhouse, Gt. Thornton Street, Hull) (Yorkshire, East Riding); White Cottages, Stewton, Louth, Lincolnshire (Lincoln Parts of Lindsey).

November 1st, 1951.—Grange Hotel Pig Farm, Templewood Lane, Farnham Common, Slough, Bucks (Buckinghamshire); Wiggs Road, Haddiscoe, Norwich, Norfolk (Norfolk); Low Road, Haddiscoe, Norwich, Norfolk (Norfolk); Lilley Hall, Prees, Whitchurch, Shropshire (Salop); College House, 60, College Road, Rotherham, Yorkshire (Rotherham); The Ness, Salph End, Renhold, Bedford (Bedfordshire); Thunder Lane Premises, Thunder Lane, Thorpe, Norwich, Norfolk (Norfolk).

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Equestrian Events of the Olympic Games, 1952

In its autumn number the *Horse and Pony News* gives the following information, obtained through the British Olympic Association from the Organising Committee of the XVth Olympiad, Helsinki, 1952. The Olympic Games at Helsinki, Finland, commence with the opening ceremony on July 19th. The equestrian events will not start until Monday, July 28th, when the programme will be as follows:—

July 28th	7.0 a.m.	Grand Dressage. Ruskeasuo, near Helsinki.
	2.0 p.m.	Grand Dressage. Ruskeasuo, near Helsinki.
July 29th	9.0 a.m.	Grand Dressage Final. Ruskeasuo, near Helsinki.
July 30th	7.0 a.m.	Dressage (Three Days Event). Ruskeasuo.
	2.0 p.m.	Dressage (Three Days Event). Ruskeasuo.
July 31st	7.0 a.m.	Dressage (Three Days Event). Ruskeasuo.
Aug. 1st	7.0 a.m.	Endurance, Cross Country, etc. (Three Days Event). Tali (Steeplechase course) and surrounding country, near Helsinki.
Aug. 2nd	2.0 p.m.	Jumping (Three Days Event). Laasko Equestrian Stadium.
Aug. 3rd	8.0 a.m.	Prix des Nations. Olympic Stadium, Helsinki.
	3.0 p.m.	Prix des Nations and exhibition by Dressage winner. Olympic Stadium, Helsinki.

At the Ruskeasuo arena, all horses will be accommodated. There are three turf-covered dressage fields, and stands for 1,000 spectators. At the Laakso Equestrian Stadium, about 500 yards away from Ruskeasuo, there is a sand-covered arena, with seating capacity for 5,500. The main Olympic Stadium at Helsinki has accommodation for 70,000 spectators, and every facility possible. Competitors and a limited number of team officials will be accommodated in an Olympic Village. The cost will be the equivalent of 6 dollars per head per day. Any women will be boarded in a village of their own about seven miles from the main village.

Accommodation for Spectators

Tickets for the Games are not yet available, but the Organising Committee hope they will be ready in all overseas countries during December, 1951. They will, in the main, be valid for a single admission, and ticket prices will be bound to the U.S.A. dollar.

The price, in dollars, is as follows: 1st price ticket—7 dollars, 2nd—5 dollars, 3rd—4 dollars, 4th—3.50 dollars, 5th—3 dollars, 6th—2 dollars, 7th—1.50 dollars, 8th—1 dollar. (Rate of exchange—2.80 to the £.)

It is not yet known how many of each type will be available in this country.

Hotels

All the hotel rooms in Helsinki have been reserved for Olympic Games officials. The organisers have, however, made arrangements so that a visitor when buying an admission ticket can reserve accommodation by purchasing the necessary lodging vouchers (one for each day) in private rooms.

The different *accommodation* available and the prices per day are as follows:—

	Dollars			
1st class sing'e room	5.00	4.00	3.50	3.00
1st class double room .. .	6.00	5.00	4.50	4.00
1st class room, three beds ..	7.00	6.00	5.50	5.00
2nd class single room	3.00	2.80	2.50	
2nd class double room . ..	4.00	3.70	3.40	
2nd class room, three beds ..	5.00	4.60	4.30	
3rd class single room	2.00	1.70		
3rd class double room	2.30	2.00		
3rd class room, three beds ..	2.90	2.60		

There will also be provision for community housing at 1.50 when bed with blankets and sheets is provided, and 1 dollar per day without bedding. Camping sites will be available at 30 cents per day.

The above prices do not include any meals. The usual price of a meal in Helsinki at an hotel is about £1 at the present rate of exchange for travellers' cheques at 640 marks to the £. It is hoped, however, that a rate nearer 900 marks to the £ will be in force for the period of the Games. The cost of living in Finland is very high, particularly for the visitor, and accommodation cannot

be expected if an Olympic Games visitor is without a lodging voucher.

A first-class single ticket for a performance, plus similar accommodation, is 12 dollars per day. Meals may cost about £3 per day, a total of approximately £7 per day.

The cost of travelling to Helsinki by steamer is between £45 and £65 return. The air rate travel is £70 for the double journey.

The British Olympic Association will, in due course, circulate all governing bodies of sport giving full information regarding the method of purchasing in this country Olympic tickets and accommodation vouchers.

. . . . .

A NEW ENGLISH SPORT

Wide Popularity of Olympic Equestrian Test

Through the courtesy of the Editor of *The Times* we are enabled to reproduce the following article by its Special Correspondent, which appeared under the above headings in the issue of October 20th, 1951:—

Since the beginning of recorded time the horse has been the friend and ally of man in his sport and war. It is therefore not astonishing to know that in the year 680 B.C., 96 years after the first Olympiad began, equestrian events were included in the Games at Olympia. These took the form of chariot races, which, by all accounts, must have been extremely dangerous. Thirty-odd years later the first riding contests were held, and these continued until the final suppression of the Games by the Emperor Theodosius in A.D. 393.

For the chariot races it appears that the type of animal favoured was the cold-blooded horse of Europe and northern Asia Minor. But for the riding events (even in those days they raced two-year-olds) the invariable choice was the pure-bred Arab, probably introduced into the Peloponnesus by Phoenician traders. It is a point of interest that the same type and breed of animal—the "dark enduring blood" of the ageless Arabian, crossed with the English thoroughbred, himself of "improved" Arabian descent—is to-day favoured above all by the French, those great horsemen, for international competition, both at show-jumping and for the three-day test of training, speed and endurance, which are the chief events of the modern Olympic Equestrian Games. This type of horse has been bred continuously in France for nearly 200 years.

Test for Cavalry

Equestrian events were reintroduced into the modern Olympic series at Stockholm in 1912, when Sweden swept the board, and these successes have been repeated consistently in the three-day event and, even more consistently, in the dressage. The three-day test was originally designed to prove the qualities of the cavalry charger and to this day it is regarded primarily as a military event by other countries or, at last, their representatives have been invariably military men and horses. To win this competition is generally accepted as the highest equestrian achievement possible. Since the war Great Britain, from an unconsidered obscurity, has risen to the forefront of the nations at show-jumping and at the coming Games at Helsinki should be able to improve on her fine performance at Wembley in 1948 and, quite possibly, to win.

The event which seems most of all appropriate to the British horse and horseman is the three-day test. In 1936 our team did extremely well to finish third at Berlin to Germany and Poland. This team had at its disposal all the resources of the Army School of Equitation at Weedon. That school has now ceased to exist and we are thrown on our private resources. Unlike all other nations there is no support from public funds to form, train and present our teams for the forthcoming Games. In 1948 a team for the three-day event was hastily assembled and hastily trained, and it put up a gallant but inevitably unsuccessful effort.

Advent of Badminton

As the result of an encouraging start, however, the Duke of Beaufort inaugurated in 1949 the "combined training test," a domestic "three-day event," in the incomparable setting of Badminton Park, the very heart of sporting England. So was born yet another English sport, destined to last while Englishmen ride and love horses. The primary object was, and remains, to discover material suitable for training for future Olympic tests, which it admirably fulfils. But the appeal of such a spectacular event has already ensnared the public imagination to such an extent that, last spring, over 30,000 people found their way to remote Badminton.

Men who have ridden in both will assert that they would rather win at Badminton than at Aintree, for the degree of fitness, courage and skill, both of horse and rider, demanded by this most exhaustive and exhausting test is higher even than that required to be victorious in the Grand National. "Badminton" is henceforth an established event in the sporting calendar, gathering fresh enthusiasts each year.

The combined test is one of training in obedience and deportment (known as dressage for want of an adequate English word) followed, on the second day, by one of speed and endurance over some 21 miles of country, including a two-mile steeplechase and five miles "across country" with some 30 varied obstacles, and, on the last day, by the jumping of a show-jumping course, as a proof of maintained fitness. All errors are heavily penalised, but substantial bonus marks can be obtained by exceptional speed over the courses. The essential difference from all other equestrian endeavour is the absence of active simultaneous competition, each competitor performing the task alone, dependent on himself for judgment of time and the nice consideration of his horse's condition and capacity.

With so many varieties of equine sport available, of which the chief is hunting, Englishmen may be forgiven if they have hitherto neglected the art of dressage, though this, in effect, is no more than the accurate performance of the elementary movements and paces taught to the cavalryman and troop-horse during their novitiates and not a highly esoteric accomplishment. On the Continent, on the other hand, dressage has been for centuries a popular pastime of itself, rather than, as with us, an occasional means to an end. It is not, therefore, surprising that, while we have plenty of horses and horsemen who should be able to accomplish the second and third stages of the combined test creditably, we have few as yet who can be relied on for the first.

Different Values

A comparison of values is interesting, since, while we in England, out of 20 points, allot a full half to dressage, they on the Continent take this item as a matter of course, because this is regarded as the first step in the education of the saddle horse, and they allot only four points to it, but value the cross-country section at eight points and the steeplechase at five. It has been proved repeatedly that a dressage-trained horse, thus rendered confident in himself and his rider, will complete the second and third stages, while a superior type of animal not so grounded is liable to fail.

The Nordic races excel in this sport (though very few civilian amateurs take part) and it is noteworthy that none favours the thoroughbred horse, preferring the type best described as the good half- or three-quarter-bred hunter. The outstanding German team of 1936 did run one thoroughbred and this was the one horse to fail them. Having been bred through the centuries for speed and for hot-blooded courage alone, the English thoroughbred has the defects of his virtues and is liable, through congenital excitability, to ruin his chances in the initial test and to be unreliable in the following examination.

On the other hand, the French Anglo-Arab, no less "thoroughbred" than the English racehorse, has given consistent proof of his perfect temperament, the heritage of his Arab ancestry. It was a French Anglo-Arab mare, L'Aiglonne, who at Aldershot in 1948 achieved the unprecedented score of plus four, 50 points better than the average winning score until then. What is needed is the typically British cold-blooded courage, the courage of Ulysses, rather than the mercurial, artistic bravery which, in a protracted and exhausting test, is likely to wane or to run too great a risk.

Long Training

Preparation for such an event must necessarily be long, and not the least part of it is the fitting of the rider to the horse, which is largely a matter of temperaments. Lack of money and the fact that in England we are entirely dependent on the amateur civilian, while the other nations can call upon their professional military establishments, considered, however, to be "amateurs," are a tremendous handicap. The preparation here, which begins at Porlock in January under that most capable and experienced trainer Captain Collings, must inevitably be short. But Porlock is an ideal centre for such training, and what enthusiasm and knowledge can achieve we may confidently expect. In view of the probable type of course to be encountered at Helsinki, the British team could have no better preparation, and already several probable representatives have experienced there the type of work which will be expected of them from January onwards.

The members of the team are giving their time at considerable sacrifice. Owners of likely horses have, with equal unselfishness, lent them. As a preliminary, four modified one-day tests were arranged for this month—[October fixtures given]—at which will be seen not only the already selected horses and riders, but also many others who may well be included in January. As a further outcome the Pony Clubs are holding similar events for their members, which must result in children becoming increasingly interested in this superb test of horsemanship.

It seems inevitable that the Olympic course at Helsinki will be over flat but uneven terrain, much of it through thick woodland, with boulder-strewn "rides," many deep, wide, open ditches, and

much timber, with frequent turns and twists and obstacles presented at awkward angles. Here there is little encouragement to the "high mettled racer," but rather the opportunity for the bold, but obedient, reliable animal, who will not become over-excited in the dressage ring before the vast crowd or blunder over the course through over-eagerness.

Beyond all international considerations this type of competition must appeal to all horsemen and those who love horses. It affords, unlike the racecourse or the show-ring, an equal chance to the man of modest means and to the rich man, and it calls for the highest possible qualities in both horse and horseman. As a spectacle these competitions compare favourably with any, for there are thrills in plenty and the chance to concentrate attention on each individual as his turn comes round.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

CURARIZING DRUGS

Sir,—In the discussion on Mrs. Sheppard's most interesting paper in *The Veterinary Record* of November 3rd, I have read with some apprehension the suggestion that Myanesin might be used alone to obtain relaxation of the abdominal muscles.

I have been under the impression that one may justifiably use the curarizing drugs only in *anaesthetised* animals and even then with caution. In discussing the use of the curarizing drugs in man, Maingot (1950) writes: ". . . it is imperative for the anaesthetist to be positive that the patients are always *under* anaesthesia during its use. The sensation of impending disaster which follows paralysis of the muscles of swallowing and of the limbs may be a terrifying and haunting experience for a patient." Moreover, the Home Office has recently banned the use of the curarizing drugs by physiologists in experimental surgery in animals, except in certain cases where special permission may be given.

In view, then, of the recognised risk of unwittingly inflicting pain in an animal which being fully conscious is unable, owing to paralysis of its motor functions, to give the usual responses, the clinical use of these drugs in unanaesthetised animals would appear to be open to question. On the other hand Mallinson (1947) has stated that Myanesin has a narcotic effect in animals in addition to its paralysing action. It would also appear that Myanesin, unlike the other curarizing drugs now in use, has a depressant action on other parts of the nervous system in addition to the myoneural junctions. These facts might therefore justify the use of Myanesin for the purpose suggested.

The views of others who have had experience in the use of the curarizing drugs would be of interest and of value to me and probably to others who have so far refrained from using these drugs even as adjuncts in anaesthesia.—Yours faithfully, Alfred T. Cowie, 1, The Knapp, Earley, Reading, Berks. *November 3rd*, 1951.

References

Maingot, R. (1950.) *Proc. R. Soc. Med.* **43.** 599.
Mallinson, F. B. (1947.) *Lancet.* **252.** 98.

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TEST-MATING YOUNG BULLS

Sir,—May I bring to the notice of veterinarians in charge of A.I. centres the benefits of a system of "test-mating" young bulls in order to expose any undesirable recessives in their genetical make-up? The system could be run in conjunction with the normal progeny testing schemes carried out by most centres.

The theory is to test-mate a bull in order to find out whether it is pure or impure in regard to an important gene or is carrying an undesirable recessive, by mating it to the corresponding recessive females.

Every year many cows in a centre's area give birth to abnormal or undesirable types of calves. Such cows should be identified and particulars filed for reference. Gradually over all the centres in Britain groups of cattle known to be carrying a certain recessive gene will be built up and these animals can be used to test-mate young unknown bulls. About a dozen animals for each type of gene are all that is required, and in a bull's first year in use ensure, if necessary by interchanging semen between centres, that he serves all these chosen cows. If from each gene being tested he serves and obtains normal progeny from a dozen cows known to carry the particular recessive gene, then it is safe to say the bull does not carry the gene in question.

This system will stop the endless trouble over the red recessive in Friesians, etc., and is a very much quicker system of test-mating than the more usual incest method where one must wait until a bull has daughters of an age to be served.—Yours faithfully, Stewart Macfarlane, Inveralay, Birastick, Isle of Annan.

CARBON-TETRACHLORIDE POISONING IN CATTLE

Sir,—It is of interest to note the very high dosage of carbon-tetrachloride which may be used under field conditions for the control of clinical fascioliasis in zebu cattle and buffalo. In the Sind Province of Pakistan Mr. M. Mohey Deen, M.R.C.V.S., has shown me that zebu cattle of approximately 600 lb. to 700 lb. in weight may receive 15 ml. of the drug in 1 oz. to 2 oz. of sesame or rape oil, while buffalo are commonly given as much as 22 ml. Instances of toxicity are negligible.

In view of the increasing importance of the disease of fascioliasis and of plans for its control on an international scale, it would be of very great assistance to receive reports of toxicity in cattle after treatment with carbon-tetrachloride.—Yours faithfully, S. Brian Kendal, Parasitologist, F.A.O. Technical Assistance Mission, c/o Ministry of Food and Agriculture (Agriculture Division), Government of Pakistan, Karachi. *October 22nd*, 1951.

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TUBERCULOSIS: BOVINE/HUMAN RELATIONSHIP

Sir,—Mr. Pitcher has asked for my opinion of the figures which he gave in your issue of August 18th in support of his "proved belief that the Attested Cattle Scheme has been responsible for a large increase in pulmonary tuberculosis."

The figures there presented do not convince me that there is necessarily a direct relationship between the incidence of human pulmonary tuberculosis and the degree of advancement of the Attested Herds Scheme in the different Scottish counties. Before I would be prepared to accept such a view I would need to be satisfied that all other variable factors had been taken into consideration. I find, for instance, after studying the recent election results that in nearly all the counties in which the incidence of human pulmonary tuberculosis has increased a majority of the electorate voted Labour, whereas those areas showing a decrease in the disease were solidly Conservative (except Zetland—Liberal). Would I therefore be justified in expressing a dogmatic belief that the incidence of pulmonary tuberculosis is directly related to political representation? I would not.

In regard to the statement that "death from tuberculosis is a corollary to infection," I would say just this: it is not only the human type of the tubercle bacillus which is responsible for the suffering and death which this disease causes amongst men, women and children. Mr. Pitcher has not produced one jot of evidence to support his "conviction" that "tuberculin" is present in the milk of tuberculous cows or that it possesses any immunising properties. On the other hand we *know* that the milk of tuberculous cows often does contain living tubercle bacilli and these organisms can maim, just as painfully, and kill, just as effectively, as the human type.—Yours faithfully, George A. Willis, Royal Veterinary College, London, N.W.1. *November 3rd*, 1951.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
Oct. 1st to 15th, 1951	13	—	9	—	—	112
Corresponding period in—						
1950	8	—	1	—	—	34
1949	11	—	47	—	1	—
1948	5	—	1	—	4	1
Jan. 1st to Oct. 15th, 1951	332	28	610	—	5	1,025
Corresponding period in—						
1950	285	20	103	—	21	210
1949	177	13	455	—	34	5
1948	84	2	250	1	52	24

* Excluding outbreaks in Army Horses.

Tuberculosis Order of 1938

The number of bovine animals slaughtered under the Tuberculosis Order of 1938 during the period July 1st to September 30th, 1951, was 784.